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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,009	06/17/2003	Thomas Ferdinand A. Pijls	05032-00029	5778
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BANNER & WITCOFF, LTD. 28 STATE STREET 28th FLOOR BOSTON, MA 02109-9601			CHORBAJI, MONZER R	
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/601,009	PIJLS, THOMAS FERDINAND A.	
	<b>Examiner</b>	<b>Art Unit</b>	
	MONZER R. CHORBAJI	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 07 March 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 25-27 and 29-52 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 25-27 and 29-52 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 17 June 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                     | Paper No(s)/Mail Date. _____ .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____ .                                  |

## DETAILED ACTION

**This final action is in response to the amendment received on 03/07/2006**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 25, 27, 29, 32-34, 37, 40, 44-45 and 48-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and further in view of Den Hollander (U.S.P.N. 5,558,819).

Regarding claim 25, the Pisecky reference discloses a method for spray drying heat sensitive liquids with steam (col.3, lines 47-56) that further teaches atomizing the liquid while admixing steam in a mixing chamber (col.6, lines 30-43) such that the mixing chamber (figure 2:104) forming a part of a nozzle (figure 2:102) situated between inflow openings for steam and product (figure 2:164 and 165) in liquid form and an outflow opening (figure 2:106) and the liquid to steam weight ratio between 1.6-10 (in

col.10, Example 1, dividing 600 kg/h of product into 90kg/h of steam is equal to 7).

Pisecky fails to teach the following: liquid solid content of at least 53%, steam pressure between 3-20 bar and the liquid residence time in the mixing chamber between 0.2-20 millisecond. The Badertscher reference teaches that liquid has a solid content of at least 53% (page 5, left column) and that steam pressure between 3-20 bar (page 4, left column). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to increase steam pressure of Pisecky to that of Badertscher for guaranteeing optimal utilization of steam with remarkable stability conditions for sterilization (Badertscher, page 1, right column, lines 90-101) and to steam treat liquids with high solid contents as taught by the Badertscher reference (page 5, left column) so that wider range of different liquids with various solid contents can be steam treated as compared to only steam treat liquids with low solid contents.

Regarding claim 25, the Badertscher reference fails to explicitly specify residence time range for products in the mixing chamber. The Den Hollander reference recognizes that milk flavor must be retained after steam sterilization (col.7, lines 34-36) and further teaches that increasing milk's temperature to 150 degree Celsius in less than one second during its free fall in the down flow heater plant is sufficient time to destroy all microorganisms in milk (col.7, lines 25-31). This teaching infers that milk exposed to a temperature of 150 degree Celsius for less than one second is sufficiently sterilized. In addition, the Den Hollander reference teaches against keeping the sterilized milk for additional time in the pressure chamber, as is conventional practice in this art. As a result, it would have been obvious to one having ordinary skill in the art at the time the

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invention was made to minimize the implicit short time of liquid to steam exposure of the Pisecky's method (Pisecky, col.3, lines 47-56) to less than one second as evidenced by the teachings of Den Hollander in order to sterilize milk, yet retain its flavor and virtually prevent the occurrence of any denaturation (Den Hollander, col.7, lines 34-36) since such time modification is a matter of routine experimentation lacking any criticality.

Regarding claims 29, 32, 37, 34, 44-45, 48 and 50-52, the Pisecky reference discloses the following: milk (figure 1:16) inherently contains proteins or fats, the liquid to steam weight ratio between 1.6-10 (in col.10, Example 1, dividing 600 kg/h of product into 90kg/h of steam is equal to 7), the product milk is a stable emulsion since it is treated with steam over a very short time interval (figure 1:16, 17 and col.3, lines 47-56), product is food (i.e., milk), pasteurized product leaving the mixing chamber flows into a drying chamber (col.6, lines 38-43) that would inherently agglomerate to produce a powder, spray dried milk is food for infants (col.6, lines 38-42), parallel flow openings for both of product and steam (figure 2:154, 156, 164 and 165), steam inflow is concentric around product inflow in the mixing chamber (figure 2:154, 156, 164, 165 and 104) and the steam is atomized in the mixing chamber (figure 1:4 and col.6, lines 34-37).

Regarding claim 27, the Pisecky reference fails to disclose using steam with pressure values in the range of 5-15 bar; however, Badertscher teaches using steam with pressure values between 3-20 bar (page 4, left column). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to increase steam pressure of Pisecky to that of Badertscher so that optimal utilization

of steam with remarkable stability conditions for sterilization (Badertscher, page 1, right column, lines 90-101) can be guaranteed.

Regarding claim 33, the Pisecky reference fails to disclose heating the product to a temperature between 120-150 degree Celsius; however, the Badertscher reference teaches (Example 4 on page 4) heating milk to a temperature from 70-150 degree Celsius. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to increase Pisecky's heat treatment temperature for milk as taught by the Badertscher reference so that effective sterilization of milk is accomplished.

Regarding claim 49, Pisecky and Badertscher fail to teach placing distribution plate into the steam inflow openings; however, Den Hollander places distribution plates into steam inflow openings (figure 2:52). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to place distribution plate into steam inflow opening of the spray drying atomizer wheel of Pisecky as taught by Den Hollander since distribution plates ensure steam uniform distribution (Den Hollander, col.3, lines 40-43).

4. Claims 26 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and Den Hollander (U.S.P.N. 5,558,819) as applied to claim 25 and further in view of Rubens (EP 0 438 783).

Regarding claims 26 and 30-31, Pisecky, Badertscher and Den Hollander all fail to disclose specification values for the size of the mixing chamber and for the outlet

opening. The Rubens reference discloses a size for the mixing chamber (page 5, numbered lines 4-7) and for the outlet opening between 6.3 mm to 13 mm (page 5, numbered lines 32-35) and teaches that the value for the opening can be made smaller depending on other variables, i.e., temperature such that modifying the diameter of the outlet opening is a matter of choice of design that depends of the type of operational model used (page 5, numbered lines 33-35). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's spray drying atomizer by modifying the sizes of the mixing chamber and the outlet openings as taught by the Rubens reference since such modifications depend on the temperature and moisture content desired as well as the flow rates of the heating medium for heat treating liquid products (page 5, numbered lines 6-7 and lines 33-34).

5. Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and Den Hollander (U.S.P.N. 5,558,819) as applied to claim 25 and further in view of Arndt (U.S.P.N. 3,843,828).

Regarding claims 35-36, Pisecky, Badertscher and Den Hollander all fail to teach using a flash system; however, Arndt teaches that after treating the product with steam, passing the heated product to a flash system (col.5, lines 55-67). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's process by including a flash system as taught by Arndt since a flashing system causes substantial cooling of the treated product resulting in shorter product heat exposure (col.5, lines 65-67 and col.6, lines 1-4).

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6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and Den Hollander (U.S.P.N. 5,558,819) as applied to claim 37 and further in view of Bond et al (U.S.P.N. 5,210,958).

Pisecky, Badertscher and Den Hollander all fail to teach to teach recycling the used steam; however, Bond, which is in the art of steam treatment, teaches re-circulating used steam by increasing its temperature and returning it to the drying chamber (figure 1, 10, 18, 20, 18a and 22). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's process by including a steam re-circulating means as taught by Bond in order to lower the overall energy consumption of the process (col.2, lines 44-49).

7. Claims 39 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and Den Hollander (U.S.P.N. 5,558,819) as applied to claim 37 and further in view of Scott et al (U.S.P.N. 3,925,560).

Regarding claim 39, Pisecky, Badertscher and Den Hollander all fail to teach an average value range for the diameter of dried particles; however, Scott, which is in the art of heat treating liquid products, teaches that after spray-drying the liquid product, the particles have a diameter between 10-60 micrometer (col.5, lines 4-5). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's process by including a spray-drying step after steam sterilization that produces particles with diameters between 10 to 60 micrometer as

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taught by Scott in order to form voids in the particles resulting in added advantage (col.3, lines 32-35).

Regarding claim 46, Pisecky teaches drying milk so that powdered milk, which is infant food, is produced (col.6, lines 38-42).

8. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and Den Hollander (U.S.P.N. 5,558,819) as applied to claim 40 and further in view of Bond et al (U.S.P.N. 5,210,958).

Pisecky, Badertscher and Den Hollander all fail to teach drying liquid products with steam. The Bond reference, which is in the art of steam treatment, teaches steam drying (col.3, lines 15-22). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's process by including a steam drying means as taught by Bond since steam drying can lead to a considerable capital cost savings and can also lead to a faster dry processing of products (col.2, lines 40-43).

9. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534), Den Hollander (U.S.P.N. 5,558,819) and Bond et al (U.S.P.N. 5,210,958) as applied to claim 41 and further in view of Hovmand et al (U.S.P.N. 4,062,641).

Pisecky, Badertscher, Den Hollander and Bond all fail to teach re-circulating non-agglomerated particles to the drying chamber through spray nozzles. Hovmand, which is in the art of agglomeration, teaches applying sequential heating steps by re-

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circulating the non-agglomerated particles (col.1, lines 47-53). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's process by including re-circulating means for non-agglomerated particles as taught by Hovmand since a certain degree of agglomeration is desired for good dispersibility of food products in water and milk (col.6, lines 36-38).

10. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and Den Hollander (U.S.P.N. 5,558,819) as applied to claim 25 and further in view of Johnston (U.S.P.N. 2,401,077).

Pisecky, Badertscher and Den Hollander all fail to explicitly teach achieving microorganism decimal reduction of at least 2; however, Johnston teaches achieving decimal reduction of at least 2 (page 3, right column, lines 24-29). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's process by including a decimal reduction step as taught by Johnston so that complete spores and bacterial destruction is accomplished (Johnston, page 3, right column, lines 26-28).

11. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pisecky et al (U.S.P.N. 4,141,783) in view of Badertscher (GB 2 036 534) and Den Hollander (U.S.P.N. 5,558,819) as applied to claim 25 and further in view of Bosund et al (U.S.P.N. 4,091,003).

Pisecky, Badertscher and Den Hollander all fail to explicitly disclose inherent features relating to the amount of solid product used in relation to the amount of steam;

however, Bosund, which is in the art of producing dried protein concentrate, teaches that the protein solution to be dried is contacted in a packed column with steam where 0.1 to 1.0 kg of steam is used per kg of protein solution (col.4, lines 43-48). Instant claim 47 recites the equivalence inverse of Bosund teachings such that upon inversion, for example, the solid content is 5 kg protein/kg steam (1kg protein/0.2 steam = 5 kg protein/kg steam). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pisecky's inherent mass content of product/steam to Bosund's solid range values since operating within this mass ratio range, deodorization and removal of all undesirable volatiles is achieved (col.4, lines 35-38).

***Response to Arguments***

12. Applicant's arguments filed on 03/07/2006 have been fully considered but they are not persuasive.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

14. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 9:00-5:30.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GLADYS J. CORCORAN can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Monzer R. Chorbaji MRC  
05/31/2006

  
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SUPERVISORY PATENT EXAMINER